

TRANSLATION**PATENT COOPERATION TREATY****PCT****INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference D-03005 PCT	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/DE2004/001545	International filing date (day/month/year) 16.07.2004	Priority date (day/month/year) 17.07.2003
International Patent Classification (IPC) or national classification and IPC C01F7/36		
Applicant SASOL GERMANY GMBH		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2. This REPORT consists of a total of <u>8</u> sheets, including this cover sheet.	
3. This report is also accompanied by ANNEXES, comprising:	
a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>5</u> sheets, as follows:	
<input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).	
<input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.	
b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4. This report contains indications relating to the following items:	
<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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International application No.

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Box No. 1

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-9 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 1-14 _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* _____ received by this Authority on _____
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1/2-2/2 _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☒ the description, pages 4, 5 _____
- ☒ the claims, nos. 1-17 _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1-12	YES
	Claims	13, 14	NO
Inventive step (IS)	Claims	1-12	YES
	Claims	13, 14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The present international preliminary examination report refers to the following search report citations; the same numbering will be used throughout the procedure:

- D1: US-A-4 117 106 (L. L. BENDIG ET AL.) 26 September 1978 (1978-09-26)
- D2: EP-A-1 193 232 (G. SATO ET AL.) 3 April 2002 (2002-04-03)
- D3: CHEMICAL ABSTRACTS, Vol. 114, No. 16, 22 April 1991 (1991-04-22), Columbus, Ohio, US; abstract no. 146327f, Y. OZAKI ET AL.: "Manufacture of porous spherical alumina particles" page 165 XP000186727
- D4: DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; VIOLANTE, A. ET AL: "Influence of pH, concentration, and chelating power of organic anions on the synthesis of aluminum hydroxides and oxyhydroxides" XP002332617, found in STN Database accession no. 94:18406
- D5: WO 95/12547 A (RWE-DEA AKTIENGESSELLSCHAFT FUER MINERALOEL UND CHEM; NOWECK, KLAUS; SC) 11 May 1995 (1995-05-11)
- D6: WO 96/34829 A (INSTITUT FUER NEUE MATERIALIEN

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
	<p>GEMEINNUETZIGE GMBH; BURGARD, DETLEF; N) 7</p> <p>November 1996 (1996-11-07)</p> <p>D7: DE 43 44 304 A (SUMITIMO CHEMICAL CO.; LTD.) 30</p> <p>June 1994 (1994-06-30)</p> <p>D8: US-A-2 917 365 (G.R. GILBERT) 15 December 1959</p> <p>(1959-12-15)</p> <p>D9: DE 24 46 094 A (CONTINENTAL OIL CO.) 10 July 1975</p> <p>(1975-07-10).</p> <p><u>1) Novelty</u></p> <p>1a) The subject matter of claims 1 to 12 is not disclosed in the prior art documents D1 to D9 and is therefore considered novel (PCT Article 33(2)).</p> <p>1b) Documents D1 (see D1, Table II) and D2 (see D2, Table I) disclose compounds containing aluminium trihydrates and having a pore volume greater than 0.6 ml/g. The products of documents D1 and D2 are suitable for use as catalyst components. The subject matter of claims 13 and 14 is therefore not novel (PCT Article 33(2)).</p> <p><u>2) Inventive step</u></p> <p><u>2a) Claims 1-12</u></p> <p>2a1) Document D4 (see D4, abstract) discloses a method for producing aluminium trihydrate in the presence of glycine and aspartic acid, but does not disclose or suggest the use of aluminium alcoholates.</p>

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2a2)	Document D5 (see claim 8, page 6, last paragraph, and page 8) discloses a method for producing nano-scale aluminium oxide (hydrate) through hydrolysis of aluminium alcoholates in the presence of polymerisation modifiers. The polymerisation modifiers effectively suppress a three-dimensional linkage of the Al-OH groups. Organic acids having an amino group are used as polymerisation inhibitors. The product produced is suitable for use in catalysts. The production of aluminium trihydrates is not disclosed or suggested in document D5.
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2a3)	Document D6 (see claim 12 and page 9, line to page 11, line 36) discloses the production of nano-scale aluminium oxide (hydrate) particles by hydrolysis at lower or higher pH values in the presence of surface-blocking substances such as amino acids. The surface-blocking substances suppress uncontrolled particle growth in such a way that particles with a uniform particle size distribution are obtained. Document D6 does not disclose or suggest the production of aluminium trihydrate.
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2a4)	Document D7 (see claim 3 and column 4, lines 14-56) discloses a method for producing aluminium hydroxide through the hydrolysis of aluminium alcoholates in the presence of a modifying agent such as an amino acid. Document D7 does not disclose or suggest the production of aluminium trihydrate.
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2a5)	The subject matter of claims 1-12 is not mentioned in the cited prior art and a logical combination of two or more of the prior art documents D1 to D9 would not
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lead a person skilled in the art to the subject matter of claims 1-12. The subject matter of claims 1-12 is therefore considered inventive and hence satisfies the requirements of PCT Article 33(3).

2b) Claims 13 and 14

2b1) Document D1 (see Table II) discloses pore volumes of non-calcined products. The calcination step is therefore not directly necessary for measuring the pore volumes of the aluminium trihydrates.

2b2) Aluminium oxides and/or aluminium trihydrates having a pore volume larger than 0.8 are disclosed by documents D1 (see Table II), D2 (see page 5, lines 42-53) and D9 (see the figure). The production of aluminium oxides and/or aluminium trihydrates with a pore volume larger than 0.8 would therefore be straightforward to a person skilled in the art.

2b3) Apart from the pore volume the applicant did not indicate any special features of the aluminium trihydrates.

2b4) Claims for aluminium trihydrates (such as gibbsite, bayerite and nordstrandite) and/or aluminium oxides having a pore volume greater than 0.8 ml/g therefore do not satisfy the requirements of PCT Article 33(3).

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box I

Basis of the report

1) The amendments submitted to the International Bureau pursuant to PCT Article 34 with the letter of 31 October 2005 introduce substantive matter which, contrary to PCT Article 34, goes beyond the disclosure in the international application as filed.

The amendments concerned are as follows:

Claims:

1a) claim 13; "further comprises the step ...";
claim 14; "methods which comprise ...".

The following are not disclosed:

-> "step involving the calcination of" and "method comprises the calcination of ...";
->> "aluminium trihydrates having a primarily bayerite, nordstrandite and/or gibbsite structure";
->>> "calcined alumina".

The following are disclosed:

-> the activation temperature was 500 °C for 3 hours (see Table I);
->> "mixture of bayerite, gibbsite and nordstrandite",

Supplemental Box

see page 4, lines 16-17;

->> "gibbsite and/or nordstrandite", see page 4, line 18 and lines 23-24;

->> "trihydrate having a gibbsite structure", see page 4, line 27;

->> "nordstrandite form", see page 4, lines 32-33;

->> "bayerite", see page 5, line 1;

->>> the trihydrates of Table I processed for 3 hours at 500°C.

1b) claim 15; "alumina obtainable from aluminium trihydrates" and "calcined alumina";
claim 16; "alumina" and "calcined alumina".

2) page 4; "alumina ... according to claim 17".
page 5; "aluminium oxides obtainable from the ...".

The application discloses only the above trihydrates and the processing of the trihydrates of Table I for 3 hours at 550°C. The disclosure of "aluminium oxides" (see page 8, line 26) is not clear and therefore cannot sufficiently support the above amendments.

The newly submitted claims 13-17 and pages 4 and 5 therefore do not satisfy the requirements of PCT Article 34(2)(b). Consequently, the newly submitted set of claims was not examined, and the examination therefore based on the original version of the claims (PCT Rule 70.2(c)).